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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,388	07/11/2003	Kuo-Yu Chou	BHT-3212-29	2203

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EXAMINER
SELBY, GEVELL V

ART UNIT	PAPER NUMBER
2622	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/617,388	CHOU, KUO-YU	
	Examiner	Art Unit	
	Gevell Selby	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kulhalli et al., US 6,822,679, in view of Lovette et al., US 7,064,781.

In regard to claims 1, 8, and 15, Kulhalli et al., US 6,822,679, discloses a correction system and correction method of an analog front end, the analog front end being used to receive a pixel signal outputted by a image sensor and convert the pixel signal to a digital output signal after amplifying the pixel signal (see figure 3), the image sensor comprising a plurality of black pixel units and a plurality of RGB pixel units, and outputting a plurality of black pixel signals and a plurality of RGB pixel signals, the correction system being used to correct the digital output signal (see figure 1, element 130), and comprising:

a correction module (see figure 3, elements 360,375, 370, 380, and 390) for receiving the digital output signal (see column 7, lines 27-28); and

generating a first digital correction signal and at least one second digital correction signal when the image sensor outputs black pixel signals (see column 7, lines 18-26);

a first digital-to-analog converter (see figure 3, element 310) for receiving the first digital correction signal and converting the first digital correction signal to a first analog correction signal (see column 7, lines 51-53); and

inputting the first analog correction signal to the analog front end to correct an offset error of the pixel signal inputted into the analog front end (see column 7, lines 51-60); and

a second digital-to-analog converter (see figure 3, element 340) for receiving the at least one second digital correction signal and converting the at least one second digital correction signal to at least one second analog correction signal (see column 7, lines 51-53); and

inputting the at least one second analog correction signal to the analog front end to be amplified and converted, then getting at least one first digital signal (see column 7, lines 51-60);

wherein the correction module generates a real converting curve according to the at least one first digital signal (see column 9, line 62 to column 10, line 2: the filtering block 360 and averager 370 determines the hot pixel and averaged the hot pixels for each line creating a real converting curve for the entire image) and

gets a gain error by comparing the real converting curve with an ideal converting curve which presents the correct converting relation between the analog output signal and the digital output signal (see column 7,lines 18-26); and

wherein the correction module corrects the offset error of the following pixel signals inputted into the analog front end according to the first analog correction signal (see column 7,lines 27-50).

The Kulhalli reference does not disclose wherein the correction module corrects the following digital output signals generated by the analog front end by the gain error.

Lovette et al., US 7,064,781, discloses a calibration system that calibrates at least one of pixel offset and pixel gain, wherein the correction module corrects the following digital output signals generated by the analog front end by the gain error (see abstract and column 5, line28 to column 6, line 9).

It would have been obvious to one of ordinary skill in the art at the time of invention to have been motivated to modify Kulhalli et al., US 6,822,679, in view of Lovette et al., US 7,064,781, wherein the correction module corrects the following digital output signals generated by the analog front end by the gain error, in order to provide uniform output from the image sensors, thereby increasing the image quality.

In regard to claims 2, 9, and 16, Kulhalli et al., US 6,822,679, in view of Lovette et al., US 7,064,781, discloses the correction system and method of claims 1, 8 and 15, respectively. The Kulhalli reference discloses wherein the analog front end comprises a correlated double sampling module (CDS) (see figure 3, element 320), a variable gain amplifier (VGA) (see figure 3, element 330) , and an analog-to-digital converter (see

figure 3, element 350), the CDS being used to generate an analog sampling signal by receiving the pixel signal and double sampling the pixel signal (see column 8,lines 9-12);

the VGA with plurality of gain factor being used to amplify the analog sampling signal with different gain factor according to different image captured by the image sensor (see column 8,lines 20-25);

the analog-to-digital converter being used to convert the amplified analog sampling signal to the digital output signal (see column 7,lines 4-5).

In regard to claims 3, 10, and 17 Kulhalli et al., US 6,822,679, in view of Lovette et al., US 7,064,781, discloses the correction system and method of claims 2, 9, and 16, respectively. The Kulhalli reference wherein the first analog correction signal is inputted into the CDS in order to correct the analog sampling signal (see figure 3: V_{CDAC} is input into the CDS 320 when the switch 324 is closed).

In regard to claims 4, 11, and 18, Kulhalli et al., US 6,822,679, in view of Lovette et al., US 7,064,781, discloses the correction system and method of claims 2, 9, and 16, respectively. The Kulhalli reference discloses wherein the at least one second analog correction signal is inputted into the VGA in order to get the at least one first digital signal after amplified by the VGA and converted by the analog-to-digital converter (see figure 3: the FDAC output voltage is input into the PGA 330 when the switch 331 is closed).

In regard to claims 5, 12, and 19, Kulhalli et al., US 6,822,679, in view of Lovette et al., US 7,064,781, discloses the correction system and method of claims 2, 9, and 16. The Kulhalli reference discloses wherein the at least one second analog correction signal

is inputted into the analog-to-digital converter in order to get the at least one first digital signal after converted by the analog-to-digital converter (see column 7, lines 1-5 and figure 3: the FDAC output voltage is input into the ADC 350 when the switch 335 is closed).

In regard to claims 6, 13, and 20, Kulhalli et al., US 6,822,679, in view of Lovette et al., US 7,064,781, discloses the correction system and method of claims 1, 8, and 15. The Kulhalli reference discloses further comprising a predetermined value (threshold), wherein the level of the corrected pixel signal is below the predetermined value (see column 11,lines 38-44).

In regard to claims 7 and 14, Kulhalli et al., US 6,822,679, discloses the correction system and method of claims 1 and 8. The Kulhalli reference discloses wherein the correction module generates a plurality of converting curve segments according to the at least one first digital signal, and the real converting curve is composed of the plurality of converting curve segments (see column 9, line 62 to column 10, line 2: the filtering block 360 and averager 370 determines the hot pixel and averaged the hot pixels for each line creating a real converting curve for the entire image).

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gevell Selby whose telephone number is 571-272-7369. The examiner can normally be reached on 8:00 A.M. - 5:30 PM (every other Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on 571-272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

gvs

LIN YE
SUPERVISORY PATENT EXAMINER